

Appl. No. 10/580,381  
Amtd. Dated June 29, 2010  
Reply to Office Action of March 3, 2010

Attorney Docket No. 81707.0200  
Customer No.: 26021

REMARKS/ARGUMENTS:

Claims 10, 12, 14, and 16 are canceled without prejudice. Claims 9, 11, 13, and 15 are amended. Support for the amendment to claim 9 can be found in original claims 10 and 12, and at p. 20, lines 17-20 of Applicant's specification. Support for the amendment to claim 13 can be found in original claims 14 and 16, and at p. 20, lines 17-20 of Applicant's specification. Claims 9, 11, 13, and 15 are pending in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 112:

Claims 10-12 and 14-16 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is moot with respect to claims 10, 12, 14, and 16 due to the cancellation of these claims. Applicant respectfully traverses this rejection as to amended claims 11 and 15.

The Office states,

"These claims include language '....are treated in an electric field in a no-load state prior to being subjected to the polarization treatment.' This language is indefinite as a polarization step is a step where the piezoelectric device is treated under an electric field in a no load state. These steps define the same process and stating that one occurs before or after the other is confusing and indefinite as no language is given as to separate them. For this reason, the claims shall be interpreted as the polarization step and the electric field step comprising the same process. In sum, the electric field application step would have a polarizing effect on the sample, so it is unclear as to how a first electric field application step could possibly occur before a polarization step as these two process would occur in the same process."

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In response, Applicant amended independent claims 9 and 13 (from which claims 11 and 15 depend, respectively) to clarify that in claim 9 "the piezoelectric layers are treated in an electric field in a no-load state prior to being subjected to a polarization treatment, wherein the polarization treatment is conducted by locking the laminate in a direction in which it is to be compressed by applying a load, and thereby gaps are partly formed in the interface among the piezoelectric layers and the internal electrode layers"; and in claim 13 "the polarization treatment is conducted by locking the laminate in a direction in which it is to be compressed by applying a load; treating the piezoelectric layers in an electric field in a no-load state prior to being subjected to the polarization treatment; and forming gaps partly in the interface among the piezoelectric layers and the internal electrode layers." Withdrawal of this rejection is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 9, 10, 12-14, and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tomoya (JP2003-201174). In addition, the Office cites Paragraphs 1 and 2 of exemplary document EP0427901. This rejection is moot with respect to claims 10, 12, 14, and 16 due to the cancellation of these claims. Applicant respectfully traverses this rejection as to amended claims 9 and 13.

Amended claims 9 and 13 clarify that the laminated piezoelectric element has partial gaps in the interfaces among the piezoelectric layers and the internal electrode layers. Primarily, because of this feature of the present invention, the laminated piezoelectric layers work to greatly increase the amount of displacement of the laminated piezoelectric element. This effect is described at p. 20, line 13-p. 21, line 10 of Applicant's specification.

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Applicant respectfully submits that Tomoya cannot anticipate or render claims 9 and 13 obvious, because Tomoya fails to teach or suggest the above limitation.

Concerning the polarization treatment, Tomoya merely describes in paragraph [0023] that the polarization treatment was conducted in an insulating oil of 60 to 150°C.

Tomoya fails to teach or suggest either the treatment in an electric field in a non-load state or the polarization treatment by applying a load, both of which are required by amended claims 9 and 13.

Upon conducting the treatment in an electric field in a non-load state and the polarization treatment by applying a load, the present invention achieves the effect that gaps are partly formed in the interface among the piezoelectric layers and the internal electrode layers, as is required by amended claims 9 and 13.

In Tomoya's method, neither of the above two treatments of the present invention are performed. Therefore, Applicant respectfully submits that gaps are not partly formed in the interface among the piezoelectric layers and the internal electrode layers.

By citing EP0427901, the Office is of the opinion that "As Tomoya's device is of this same construction, it would inherently encounter the same gaps being developed along the interface."

In response, Applicant respectfully submits that the Office is misinterpreting the content of EP0427901. Specifically, EP0427901 is simply describing the formation of a gap on the electrode plane around the boundary between electrostrictively active and inactive parts (EP0427901, p. 2, lines 10-12).

In view of the foregoing, it is clear that EP0427901 is not teaching or suggesting that gaps are partly formed in the interface among the piezoelectric

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layers and the internal electrode layers. In addition, EP0427901 fail to teach or suggest the above two treatments of the present invention.

In light of the foregoing, Applicant respectfully submits that Tomoya cannot anticipate or render claims 9 and 13 obvious, because Tomoya fails to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claims 11 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomoya in view of Chen et al. (U.S. Patent No. 5,045,747). Applicant respectfully traverses the rejection.

Claims 11 and 15 depend from claims 9 and 13, respectively, and as such include all the limitations of claims 9 and 13, and therefore, cannot be rendered obvious over Tomoya for the same reasons discussed above. Chen cannot remedy the defect of Tomoya and is not relied upon by the Office for such. Instead, the Office cites Chen for teaching an apparatus useful for poling piezoelectric ceramics. According to the Office, this apparatus meets the method applied by Tomoya, wherein the piezoelectric are submerged in an insulating oil and put under a polarizing field; and Chen teaches that the electrodes used in creating this field should be connected to a direct current.

In light of the foregoing, Applicant respectfully submits that the cited references either alone or in combination cannot render claims 11 and 15 obvious, because the combination of references fails to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

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In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310)785-4600 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

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